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The allocation of death in the Salem witch trials: a public choice perspective

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Abstract World folklore and history are replete with examples that involve economics principles. The present note builds upon other published work by providing an empirical public choice analysis of the Salem witch trials of 1692. Our analysis suggests that the pattern of accusations during this episode was non-random, and works to support the public choice argument that Reverend Parris and the other ministers used the witchcraft hysteria as a "crusade" against residents of east Salem village because they supported – against the wishes of Parris and the west Salem villagers – economic and political alignment with the neighboring Salem town.

Whatever else they may have been, the Salem witch trials cannot be written off as a communal effort to purge the poor, the deviant, or the outcast (Boyer and Nissenbaum, 1974, pp. 33).

Introduction

World folklore and history are replete with examples that involve economics principles. A sizable portion of these concern both military and non-military endeavors that proved costly in terms of lives lost. In the past two decades, economic angles to a few of these stories have been described in the literature. These include, but are not limited to, Anderson and Tollison (1991), Goff and Tollison (1987), McClure and Van Cott (1994) and Mixon (1993, 2000) [1]. The last in this list employs a stylized, static monopoly model – developed originally by Ekelund *et al.* (1989, 1991) to examine the medieval Catholic Church – in order to explore the market-pull aspects of the Salem witch trials episode of 1692. As Mixon (2000, p. 179) points out, the historical evidence concerning the witchcraft episode in Salem suggests that the ministers, including Samuel Parris (the Salem village minister who led the witch trials episode), successfully employed Puritan religious doctrine regarding witchcraft to increase the demand for ministerial services and thus church membership.

Such an economic interpretation of events is perfectly consistent with previous medical explanations concerning the delirium/melancholia of the

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young, female accusers, such as with the hypothesis concerning *ergotism* (i.e. bread poisoning) in Mappen (1980). As Mixon (2000, p. 181) suggests, medical hypotheses explain only the *physical symptoms* of the accusers, while an economic interpretation endeavors to explain the *behavior* of Reverend Parris, the other ministers, and the institutional church they represented at the time.

A “new interpretation” of events in Salem developed by Carlson (1999) posits that the behavior of the accusers is explained by an outbreak of encephalitis. An adequate epidemiological case is made to describe the *physical symptoms/behavior* of the young girls (i.e. the “bewitched” accusers). These arguments are supported by the region’s geography, given that most of the accusers who suffered physical symptoms (e.g. delirium, etc.) resided in the western half of Salem village, near the Ipswich river – an attractive nesting ground for mosquito populations. Carlson’s case is, arguably, more convincing than Mappen’s regarding the condition of the young accusers during the episode (i.e. their physical symptoms/behavior). Again, little is done to advance the economic aspects of the events. The present research, unlike the monopoly model analysis of Mixon (2000), builds upon the explanation of Boyer and Nissenbaum (1974) by providing an empirical investigation of the (historical) geographic, social and economic patterns of the witch trials in 1692. Such tests reject any proposed randomness (Carlson, 1999, p. xiii) to these spatial patterns that has been the focus of prior research. Finally, the analysis presented here serves as a template for examining other witch-hunt events in Europe and Africa (Parrinder, 1970; Willis, 1995).

Factionalism in Salem village as a public choice catalyst: a brief history

In their well-regarded history of events in 1692 Salem, Boyer and Nissenbaum (1974) detailed some of the economic and social patterns of accusations of witchcraft. Although the first three people accused of witchcraft were considered “deviants” or “outcasts”, a clear dichotomy exists in the accusation pattern beginning in March 1692. Two of the accused in March of that year were church members and wives of prosperous freeholders. In April 1692, 22 individuals were accused, including Phillip English (the wealthiest ship owner in Salem) and George Burroughs (Harvard graduate, who owned a considerable estate in England). By the end of the summer of 1692, the accused included several men with “great estates” in Boston (Boyer and Nissenbaum, 1974, p. 32). These included two sons of the distinguished former Governor, Simon Broadstreet, Nathaniel Saltonstall (member of the Governor’s Council), and Lady Phips (wife of the current Governor of Massachusetts). As one attorney who prepared the cases against the accused wrote at the end of May 1692, “The

afflicted spare no person of what quality so ever" (Boyer and Nissenbaum, 1974, p. 32).

As Boyer and Nissenbaum point out, the accusers did not know most of the people whom they accused of witchcraft. The alleged witches and those who accused them lived on opposite sides of Salem village (Boyer and Nissenbaum, 1974, pp. 33-5). According to these authors:

Whatever was troubling the girls and those who encouraged them, it was something deeper than the kind of chronic, petty squabbles between near neighbors which seem to have been the root of earlier and far less severe witchcraft episodes in New England." (Boyer and Nissenbaum, 1974, pp. 33-5).

Political history of the region suggests a public choice interpretation of the pattern of accusations during the episode. As Boyer and Nissenbaum (1974, p. 39) point out, although Salem town was becoming steadily more mercantile, Salem town "had no wish to lose control of the rural hinterland (i.e. the adjacent Salem village) which not only increased her tax revenues, but provided the food which the (Salem) town proper could not supply". As these authors suggest:

The town's concern over the separatist tendencies of her agricultural regions was intensified when several of these regions did, in fact, break away to become independent towns: Wenham in 1643, Manchester in 1645, Marblehead in 1648, and Beverly in 1668. Clearly this trend needed to be checked, and when the Salem (village) farmers showed signs, late in the 1660s, of going in the same direction, the town determined to take a stand" (Boyer and Nissenbaum, 1974, pp. 39-40).

The period of conflict between the two locales involved "scores of petitions, resolutions, depositions, and protests" regarding the village's economic, political, and religious independence from the town (Boyer and Nissenbaum, 1974, p. 40). The conflict, however, was more complex than simply town versus village. As Boyer and Nissenbaum (1974) detailed, in at least two important respects – quality of land and access to market – the Salem farmers on the east side of the village had a significant advantage over those on the west side. "Modern topographical maps show . . . (that) the best lands in the village were the broad, flat meadows of the eastern part . . . (and the) eastern side of the village, too, was significantly closer to the network of roads and waterways which gave access to Salem town and her markets . . . In both these respects, then, the farmers on this side . . . had a crucial edge in supplying the . . . town" (Boyer and Nissenbaum, 1974, p. 94). Given the additional fact that the eastern side contained most of the village's other commercial activity, it is evident that the easterners were brought into more regular contact and shared the economic, political and religious interests of the town (Boyer and Nissenbaum, 1974, pp. 94-8) [2]. Thus, there was an incentive for western villagers to oppose the eastern villagers in a political struggle. We explore (empirically) the relationship between this political factionalism and the pattern of events

during the Salem witch trials. Our tests refute any randomness to the pattern of indictments and death.

The allocation of death

Public choice and the allocation of death: empirical evidence

Table I presents data from Boyer and Nissenbaum (1974, pp. 34-5) regarding geographic patterns of prosecution and defense during the witch trials phenomenon[3]. Based on data analysis provided by Boyer and Nissenbaum (1974) suggesting roughly equal populations at either ends of Salem village (i.e. the east and west), the exhibited patterns of accusations or support for the judicial prosecution of the “witches” can be tested against a random pattern. These tests synthesize the public choice explanation of events at that time, as put forth by Boyer and Nissenbaum (1974) and, to a lesser degree, by Mixon (2000)[4].

The first percentages detailed in Table I suggest that the vast majority of the accused (who lived within the bounds of Salem village) resided in the eastern section of the village (i.e. from those areas less supportive of Reverend Parris and more amenable to social, political and economic alignment with Salem town). This figure – 86 percent – is statistically different from a random expectation (i.e. roughly 50 percent) at the 95 percent level of confidence. The second entry in Table I points out that the “accusers” (i.e. those supporting/assisting in the prosecution of the Salem “witches” through testimony and other means) resided overwhelmingly in the western part of the village. Once again, the exhibited pattern is statistically different from a random pattern (at the 99 percent level of confidence). The final entry in Table I indicates that the percent of Salem village citizens in opposition to, or skeptical of, the entire witchcraft episode at the time resided primarily in the eastern part of the village. A random expectation regarding the geography of opposition or skepticism is rejected, at the 99 percent confidence level, by the actual or exhibited percentage.

The findings of Table I are consistent with epidemiological theories, such as that of Carlson (1999), given that they suggest that the “accusers” were

	<i>n</i>	East village	West village
Percent of accused	14	86 (4.094)**	14
Percent of accusers	32	6	94 (15.324)***
Percent assisting defense/skeptical of trials	29	83 (7.071)***	17

Notes: The figures in parentheses are χ^2 statistics (with square roots following, approximately, a normal distribution) for tests of the actual percentages against a random pattern percentage (i.e. 50 percent) for each category. ***[**] denote significance at the 0.01 [0.05] level. *n* represents the number of observations for each category

937

Table I.
Geographic patterns of prosecution and defense during the Salem witch trials

statistically more likely to reside in the west versus a random location pattern. This supports the thesis of encephalitis, given the location of the Ipswich river. However, the fact that “accusers” from the west were statistically more likely to indict, as “witches”, eastern villagers (compared to a random pattern of indictments) during the witch trials episode supports the notion that the cycle of events was *politicized* by Parris and the other ministers involved in the trials. The evidence is consistent with the theory that Parris and the ministers directed their indictments and death sentences at their eastern opposition. East Salem farmers were more politically aligned with Salem town, and the statistical tests support the notion that the ministers used the trials strategically to solidify the position of the institutional church they represented at the time. As Mixon (2000, p. 182) states, the ministers used the events of 1692 to initiate “... a crusade against many of Salem’s citizens”. As we suggest, these “citizens” were *statistically* most likely to be eastern village farmers or mercantilists, who politically opposed Parris and the western villagers.

Table II presents additional data from Boyer and Nissenbaum (1974, pp. 82-4) that relate to other dimensions of factional conflict. Among the 35 households refusing to support the tax petition to provide ministerial remuneration to Reverend Parris in 1695-1696, tax documents suggest that the distribution of income/wealth was approximately uniform (i.e. the figures – 43, 34 and 23 percent – are not individually statistically different from 33 percent). Among pro-petition villagers, a distinct economic pattern emerges.

	Percentage of households in each tax bracket, 1695-1696	
	Pro-Parris (average tax: 10.9 shillings)	Anti-Parris (average tax: 15.3 shillings)
Under 10 shillings (n = 31; n = 15)	61 percent (8.032)*** [2.702]*	43 percent (0.744)
10-20 shillings (n = 16; n = 12)	31 percent (0.047)	34 percent (0.008) [0.085]
Over 20 shillings (n = 4; n = 8)	8 percent (9.741)***	23 percent (0.8718) [3.885]**

Notes: Tax records are taken from Boyer and Nissenbaum (1974, p. 82). The figures in parentheses below the percentages are χ^2 statistics (with square roots following, approximately, a normal distribution) for tests of the actual percentages against a uniform percentage (i.e. 33 percent) for the pro- and anti-Parris factions. The figures in brackets below the percentages are similar χ^2 statistics for tests of differences between the Pro- and Anti-Parris percentage within each tax bracket (e.g. 61 versus 43 percent, etc.). ***[**][*] denote significance at the 0.01 [0.05] (0.10) level. Finally, the numbers in parentheses below each tax bracket represent the number of observations according to the pro-Parris and anti-Parris dichotomy, respectively

Table II.
Economic and religious factionalism in Salem village

The percent of support drawn from villagers paying under 10 shillings in taxes exceeds the expectation of uniformity (i.e. 33 percent) at the 99 percent confidence level, while the percent of support coming from those paying over 20 shillings in taxes falls short of uniformity (i.e. 33 percent) at the 99 percent confidence level.

Additionally, the lower income (<10 shillings) villagers exhibited a *statistically* greater representation among the pro-Parris (i.e. pro-petition) faction than the anti-Parris faction (i.e. 61 percent is greater than 43 percent at the 90 percent confidence level). Similarly, the upper income (>20 shillings) villagers exhibited a *statistically* greater representation among the anti-Parris faction than the pro-Parris faction (at the 95 percent confidence level)[5]. These tests suggest that the income distributions for pro- and anti-Parris sentiment in the village were statistically different, and they also support the geographical pattern described earlier, given that most of the wealth of Salem village resided on its eastern side. The complex public intertwining of geography and economics, as well as religion, in Salem village in 1692 and later, works to support a political interpretation of events. As Mixon (2000, p. 182) concluded, the "... Salem witchcraft episode shows how relatively easy it was in colonial North America for ministers to interpret questionable actions as witchcraft ... In this case, the ... consequence of doctrinal innovation meant that, between June 10 and September 22 of 1692, 19 men and women along with two dogs were hanged to death as witches, and one man was pressed to death for refusing to plead to the indictment of witchcraft". The present note synthesizes and supports public choice hypotheses by statistically refuting the proposition that the pattern of events in 1692 Salem was random (Carlson, 1999).

The allocation of
death

939

Concluding comments

In this paper, we have attempted to advance public choice aspects of the Salem witch trials. Specifically, we build upon Boyer and Nissenbaum (1974) by undertaking some empirical testing of the geographical, social, and economic patterns of prosecution and defense in the 1692 Salem witch trials. Our analysis suggests that the "accusers" were statistically more likely to reside in the western portion of Salem village (in 1692) than a random pattern would suggest. However, the fact that "accusers" from the west were statistically more likely to indict, as "witches", eastern villagers (compared to a random pattern of indictments) supports the notion that the cycle of events was *politicized* by Reverend Parris and the other ministers involved in the trials. The ministers drew support from, and thus supported, western villagers in their struggles versus the eastern villagers and Salem town over economic and religious self-determination. In one sense, the entire episode is analogous to a modern-day geographic annexation battle gone awry, wherein 19 men and women were hanged to death as witches, and one man was pressed to death for

refusing to plead to the indictment of witchcraft. Thus, our tests add to the public choice literature by refuting the proposed randomness of the spatial patterns.

Notes

1. The title of the current study borrows from the title of the Goff and Tollison (1987) study on the public choice aspects of the Vietnam war.
2. Boyer and Nissenbaum (1974) detailed the complexity of the factional dispute (regarding Reverend Parris) in Salem that connected the religious, economic and geographic dimensions. For instance, most church members (84 percent) supported a petition to establish a tax to provide remuneration for Reverend Parris, the minister hired by Salem villagers in 1689. However, among the wealthiest Salem villagers, about two-thirds opposed the tax petition to support Parris. Finally, among petitioners nearest to Salem town (eastern villagers), opposition to the petition ran as high as 86 percent; among those most remote from the town (western villagers), support for Parris stood at 80 percent. Some of these dimensions are explored empirically.
3. Boyer and Nissenbaum's (1974) geographic case is based on topography developed originally in the work of Upham (1867).
4. In a footnote at the end of his study, Mixon (2000, p. 183) states, "... self-interested behavior leads to the allocation of resources to their highest valued uses, and output is produced by lowest cost producers, even though these results are not the immediate objectives of market participants. In this view, those who ended up on the scaffold in Salem were there because some people favored such an outcome". The passage suggests that Parris' and the other ministers' primary strategic objective was that the witch trials episode would lead to an increased demand for ministerial services. That the trials enhanced their institutional church's monopoly and supplanted opposition (economic and religious) in east Salem village became a secondary benefit. The study of Mixon (2000) only hints at the public choice explanations built by Boyer and Nissenbaum (1974) that are empirically examined in this study.
5. Table II also reports that the average tax paid by pro-Parris villagers was 10.9 shillings, compared to 15.3 shillings for the anti-Parris faction.

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The allocation of death

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941

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